

## CLAIMS

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1. A method for testing a multi-device enclosure that contains multiple devices, the method comprising:
- controlling a number of bypass circuits to bypass a number of external communications medium connectors to isolate the multi-device enclosure from an external communications medium;
  - testing the multi-device enclosure; and
  - when the multi-device enclosure passes the testing, controlling a number of bypass circuits to connect the number of external communications medium connectors to the external communications medium.
2. The method of claim 1 wherein testing the multi-device enclosure further comprises:
- controlling a number of bypass circuits to isolate the devices from an internal communications medium;
  - testing the internal communications medium;
  - when the internal communications medium passes the testing, for each device, controlling a bypass circuit to connect the device to the internal communications medium,
  - testing the device, and
  - when the device fails testing, controlling a bypass circuit to disconnect the device from the internal communications medium, and
  - returning an indication that the testing of the multi-device enclosure has succeeded; and
  - when the internal communications medium fails the testing,

returning an indication that the testing of the multi-device enclosure has failed.

3. The method of claim 2 wherein the external communications medium and the  
5 internal communications medium are both portions of a fibre channel arbitrated loop.

4. The method of claim 3 wherein controlling a number of bypass circuits to  
bypass a number of external communications medium connectors to isolate the  
10 multi-device enclosure from an external communications medium further includes:

controlling a bypass circuit to bypass a primary external communications  
medium connector to isolate the multi-device enclosure from the upstream portion  
of the fibre channel arbitrated loop; and

controlling a bypass circuit to bypass an expansion external communications  
15 medium connector to isolate the multi-device enclosure from the downstream  
portion of the fibre channel arbitrated loop.

5. The method of claim 3 wherein the multi-device enclosure may be connected to  
two fibre channel arbitrated loops and wherein controlling a number of bypass  
20 circuits to bypass a number of external communications medium connectors to  
isolate the multi-device enclosure from an external communications medium further  
includes:

controlling two bypass circuits to bypass two primary external communications  
medium connectors to isolate the multi-device enclosure from the upstream portions  
25 of two fibre channel arbitrated loops; and

controlling two bypass circuits to bypass two expansion external  
communications medium connectors to isolate the multi-device enclosure from the  
downstream portions of two fibre channel arbitrated loops.

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6. The method of claim 3 wherein testing the internal communications medium includes sending a loop initialization primitive around the internal portion of the fibre channel arbitrated loop.

5 7. The method of claim 3 wherein testing a device includes:

    sending a loop initialization primitive around the internal portion of the fibre channel arbitrated loop.

8. The method of claim 7 wherein testing a device further includes:

10     issuing commands to the device to cause the device to undergo a self-test and to solicit information from the device about the device.

9. The method of claim 8 wherein the commands issued to the device are small computer systems interconnect enclosure services commands.

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10. A method for testing a multi-device enclosure that contains multiple devices, the method comprising:

    controlling a number of bypass circuits to isolate the devices from an internal communications medium;

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    when the internal communications medium passes the testing,

        for each device,

            controlling a bypass circuit to connect the device to the internal communications medium,

            testing the device, and

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        when the device fails testing,

            controlling a bypass circuit to disconnect the device from the internal communications medium, and

        returning an indication that the testing of the multi-device enclosure has succeeded; and

when the internal communications medium fails the testing,  
 returning an indication that the testing of the multi-device enclosure has  
 failed.

5 11. The method of claim 10 further including:

when a device malfunctions during operation of the multi-device enclosure,  
 controlling a bypass circuit to disconnect the device from the internal  
 communications medium.

10 12. A self-testing multi-device enclosure comprising:

an internal communications medium;  
 a number of devices interconnected by the internal communications medium;  
 a number of connectors that connect the multi-device enclosure to an external  
 communications medium;

15 bypass circuits that can be controlled to isolate devices from, and connect  
 devices to, the internal communications medium;

bypass circuits that can be controlled to isolate connectors from, and connect  
 connectors to, the external communications medium;

a processor; and

20 a self-test routine that runs on the processor to test the internal communications  
 medium and the number of devices and to control bypass circuits to isolate the  
 multi-device enclosure during self-testing from the external communications  
 medium and to isolate the devices from the internal communications medium.

25 13. The self-testing multi-device enclosure of claim 12 wherein the internal  
 communications medium and the external communications medium are portions of  
 a fibre channel arbitrated loop.

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14. The self-testing multi-device enclosure of claim 13 wherein the number of devices include devices that exchange data and control information with other devices connected to the fibre channel arbitrated loop.

5 15. The self-testing multi-device enclosure of claim 14 wherein the self-test routine controls a number of bypass circuits to bypass a number of connectors to isolate the multi-device enclosure from the external communications medium; tests the multi-device enclosure; and when the multi-device enclosure passes the testing,

10 controls a number of bypass circuits to connect the number of connectors to the external communications medium.

16. The self-testing multi-device enclosure of claim 15 wherein, after isolating the multi-device enclosure from the external communications medium, the self-test routine tests the multi-device enclosure by:

controlling a number of bypass circuits to isolate the devices from the internal communications medium;

testing the internal communications medium;

when the internal communications medium passes the testing,

20 for each device,

controlling a bypass circuit to connect the device to the internal communications medium,

testing the device, and

when the device fails testing,

25 controlling a bypass circuit to disconnect the device from the internal communications medium, and

returning an indication that the testing of the multi-device enclosure has succeeded; and

when the internal communications medium fails the testing,

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returning an indication that the testing of the multi-device enclosure has failed.

17. The self-testing multi-device enclosure of claim 16 wherein controlling a  
5 number of bypass circuits to bypass a number of external communications medium connectors to isolate the multi-device enclosure from an external communications medium further includes:

controlling a bypass circuit to bypass a primary external communications  
medium connector to isolate the multi-device enclosure from the upstream portion  
10 of the fibre channel arbitrated loop; and

controlling a bypass circuit to bypass an expansion external communications  
medium connector to isolate the multi-device enclosure from the downstream  
portion of the fibre channel arbitrated loop.

18. The self-testing multi-device enclosure of claim 17 wherein testing the internal  
communications medium includes sending a loop initialization primitive around the  
internal portion of the fibre channel arbitrated loop.

19. The self-testing multi-device enclosure of claim 17 wherein testing a device  
20 includes:

sending a loop initialization primitive around the internal portion of the fibre  
channel arbitrated loop.

20. The self-testing multi-device enclosure of claim 19 wherein testing a device  
25 further includes:

issuing commands to the device to cause the device to undergo a self-test and  
to solicit information from the device about the device.

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